REVISED SYNOPSIS

IMPACT OF PSYCHOLOGICAL CONSTRUCTS ON INDIVIDUAL INVESTOR'S FINANCIAL RISK TOLERANCE: A STUDY OF INDIAN CAPITAL MARKET

For the Award of Doctor of Philosophy (Ph.D.) in Management

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1. Introduction

The objective of every investment is to make profits and to increase wealth. The saying that there is no reward without risk is well known; further, risk is inherently associated with every economic decision. Risk is defined as "the unexpected variability (negative) of returns than those expected from investments" (Kannadhasan, 2006; Kannadhasan & Nandagopal, 2010). The systematic examination of the factors related to financial risk tolerance, defined as the willingness to engage in "behaviours in which the outcomes remain uncertain with the possibility of an identifiable negative outcome" (Irwin, 1993), has become an important research topic within the financial planning, psychological, and economics professions. As a result, over the past decade the academic community's and financial service profession's appreciation for and knowledge of financial risk tolerance has grown substantially.

Trone, Allbright, & Taylor (1996) indicated that measuring a person's financial risk tolerance is difficult because risk tolerance, as a multidimensional attitude, is an elusive concept that appears to be influenced by a number of predisposing factors. Kahneman and Tversky (1979) noted that "the magnitudes of potential loss and gain amounts, their chances of occurrence, and the exposure to potential loss contribute to the degree of threat (versus opportunity) in a risky situation." This observation led them to conclude that people are consistently more willing to take risks when certain losses are anticipated and to settle for sure gains when absolute rewards are expected. The insight is the fundamental tenet of Prospect Theory, which has since become the primary behavioural finance framework used to study risk tolerance and risk-taking (Statman, 1995; Tversky & Kahneman, 1981).

1.1 Prospect Theory

Although there have been a number of conceptual frameworks based on behavioural observations (e.g., Regret Theory, Ellsberg's Paradox, Satisficing Theory), Prospect Theory (Kahneman & Tversky, 1979) continues to be the primary descriptive alternative to Expected Utility Theory. Within the Prospect Theory framework, value, rather than utility, is used to describe gains and losses.

One of the primary outcomes associated with Prospect Theory is that a person's risk tolerance will depend on how a situation or event is framed. Essentially, consumers demonstrate risk-averse behaviour when asked to make a choice in which the outcome is framed as a gain, while the same consumer will often choose the risk-seeking alternative when the choice if framed as a loss (Della Vigna, 2009).

1.2 Risk-As-Feelings Hypothesis

One argument critical of Expected Utility Theory, Prospect Theory, and behavioural frameworks is that each is consequential in nature. A unifying and underlying assumption within these frameworks is that individuals make decisions based on an ordered assessment of consequences. A relatively new way of conceptualizing risk tolerance and risk taking suggests that this assumption may not be entirely correct.

According to Loewenstein, Weber, Hsee, and Welch (2001), existing frameworks "posit that risky choice can be predicted by assuming that people assess the severity and likelihood of the possible outcomes of choice alternatives, albeit subjectively and possibly with bias or error, and integrate this information through some type of expectations-based calculus to arrive at a decision. Feelings triggered by the decision situation and imminent risky choice are seen as epiphenomenal—that is, not integral to the decision-making process." In response, Loewenstein and his associates proposed a "risk-as-feelings" theoretical perspective.

The risk-as-feelings hypothesis puts forward the notion that emotional reactions to risky situations often diverge from reasoned assessments. When this happens, emotional reactions directly influence behaviour. Within the framework, emotional responses, such as worry, fear, dread, and anxiety influence judgments and choices. For example, people in good moods tend to view risky situations with less threat than individuals in a bad mood (Loewenstein et al., 2001; Olson, 2006). The risk-as-feelings framework is unique in terms of acknowledging the influences of cognitive and emotional factors and offers a fresh approach to understanding both risk tolerance and risk-taking (Grable, 2016)

Furthermore, during the past couple of years, capital markets have been characterized by increasing volatility and fluctuations. Globally integrated capital markets have been increasingly exposed to macroeconomic shocks which have been affecting markets on an international scale.

The purpose of this study is to better understand the individual investor's financial risk tolerance, using psychological and demographic factor classifications as the basis of the research.

2. Overview

2.1 Indian Capital Market

Capital Market is a conduit for flow of monetary resources from those who save money to those who need i.e., it consists of a series of channels through which the savings of the community are made available for industrial and commercial enterprises and public authorities vital for the economic growth of the nation.

A revolution in the financial intermediation from a credit based financial system to a capital market based system which was partly due to a shift in financial policies from financial repression (credit controls and other modes of primary sector promotion) to financial liberalization led to an increasing implication of capital markets in the allocation of financial resources.

Since 1980, the Indian capital market has seen a sudden progress as a result of liberalisation and globalisation policies adopted by the nation which opened the doors to various channels for financing the private sector, thereby capturing the attention of many investors.

2.1.1 Trends in the Indian Capital Market in the Pre and Post Liberalization period

The origin of stock exchanges in India can be traced back to the latter half of the 19th century. After the American Civil War (1860-61) due to the share mania of public, the number of brokers in shares increased. The brokers organised an informal association in Mumbai named "The Native Stock and Share Brokers Association". Later on other stock exchanges were established in different centres like Chennai, Delhi, Nagpur, Kanpur, Hyderabad and Bangalore which were regulated by the Securities Contract Regulation Act, 1956.

During the pre-liberalization phase, Indian Stock Exchange suffered a setback as a result of many factors including;

- pre nationalization effects of Indian banks,
- regulatory problems,
- lack of transparency in the activities of stock market participants, and
- the open outcry trading system.

During this era, stock market was perceived to be a place for the 'rich men's club'. The outcome of revamping of the capital market on the New Issue Market resulted in the increment of the total amount of proposed investments through the New Issues Market from Rs. 285 crores in 1960 to Rs. 992 crores in 1980 and finally to Rs. 23,357 crores in 1990.

Table 1: Capital raised in the New Issues market by Indian companies during the Pre-liberalisation period

Year	Capital Raised (in crores)	Yearly Average (in crores)
1951-60	285	28.5
1961-70	728	72.8
1971-80	992	99.2
1981-90	23,357	2335.7

Source: *Reserve Bank India Reports on Currency and Finance, 1960-90*

The scenario of Indian stock market changed with the enactment of the Securities Exchange Board of India Act (SEBI) in 1992 followed by the establishment of the National Stock Exchange (NSE).

The two stock exchanges namely Bombay Stock Exchange (BSE) and the National Stock Exchange (NSE) were refurbished with fully electronic trading platforms.

Bombay stock exchange has an index of SENSEX comprising of 30 actively traded companies and National Stock Exchange has an index of NIFTY with 50 actively traded companies. The SENSEX & NIFTY are the growth indicators of the Indian stock market.

The post liberalization era marked the increased participation of foreign institutional investors.

The table 2 below shows the state of new capital raised from the market by the Indian companies in the post- liberalization period and it is clearly observed that the yearly average capital raised during the period 2000-09 was higher than the amount mobilized during the period 1991-99.

Table 2: Capital raised in the New Issues market by Indian companies during the Post - liberalisation period

Year	Capital Raised (in crores)	Yearly Average (in crores)
1991-99	1,06,799	13349.80
2000-09	2,33,388	23338.80

Source: *Handbook of statistics on the Indian securities market, 2010, Securities and Exchange Board of India*

The total market capitalization of National Stock Exchange for the year 2014-15 was Rs. 43,296,550 million and the Bombay Stock Exchange was worth Rs. 8,548,853 million (Handbook of statistics on the Indian securities market, 2014-15, Securities and Exchange Board of India). Also, there have been a significant increment in number of listed companies from the year 2013-14 to the year 2014-15.

The total number of listed companies at both stock exchange, NSE & BSE are enumerated in table 3 below:

Table 3: Number of Listed Companies

Year	Number of Listed Companies	
	NSE	BSE
2013-14	1,688	5,336
2014-15	1,733	5,624

Source: NSE and BSE

By referring the above data, it has become very clear that the capital market in India is performing well even amidst the global turmoil indicating favourable market sentiments.

2.2 Investors in Indian Capital Market

Investors are the backbone of any securities market as they are the prime constituents and the key players in the financial system. Investors support the development of economy by mobilizing their surplus resources through the capital market and other means of investments. There are mainly three categories of investors in markets, viz. retail investors, institutional investors, and non-institutional investors.

2.2.1 Individual Investor

In accordance with SEBI (Disclosures of Investor Protection) Guidelines {DIP Guidelines}, a retail investor also known as individual investor is defined as the one who applies or bids for securities of or for a value not exceeding 1 lakh as against the earlier limit of 50,000. However, SEBI has since increased the limit for individual investors to 2 lakhs (SEBI Circular, 2010).

The word "applies or bids" means the investor can invest in primary market through an IPO application or in mutual fund or in secondary market by bidding through a broker/sub-broker.

The number of individual investors in the present market place can very well be gauged from the number of DEMAT accounts maintained at both the depositories, NSDL and CDSL (most of these account holders have account in both the DPs). The statistics are enumerated in Table 4 below:

Table 4: DEMAT Statistics

Year	DEMAT Quantity (in lakh)		DEMAT Accounts (in lakhs)	
	NSDL	CDSL	NSDL	CDSL
2013-14	79,55,034	17,73,105	131	88
2014-15	92,73,570	20,60,123	137	96

Source: *NSDL and CSDL*

The individual investors assume greater significance because the household savings account 30% of Gross Domestic Savings and it is the prime source of funding. The individual investors stay for a longer period and this provides the stability to the markets.

3. Literature Review

For the purpose of the study, a detailed review of literature is conducted on the various psychological constructs to identify its impact on financial risk tolerance and risk-taking behaviour of individual investor. The review is first classified in two broad categories; paper content and methodological approach. Paper Content is further classified into Emotional Intelligence and Impulsiveness. The Methodological Approach is classified into Conceptual and Empirical Approach (Ref. Figure 3.1).

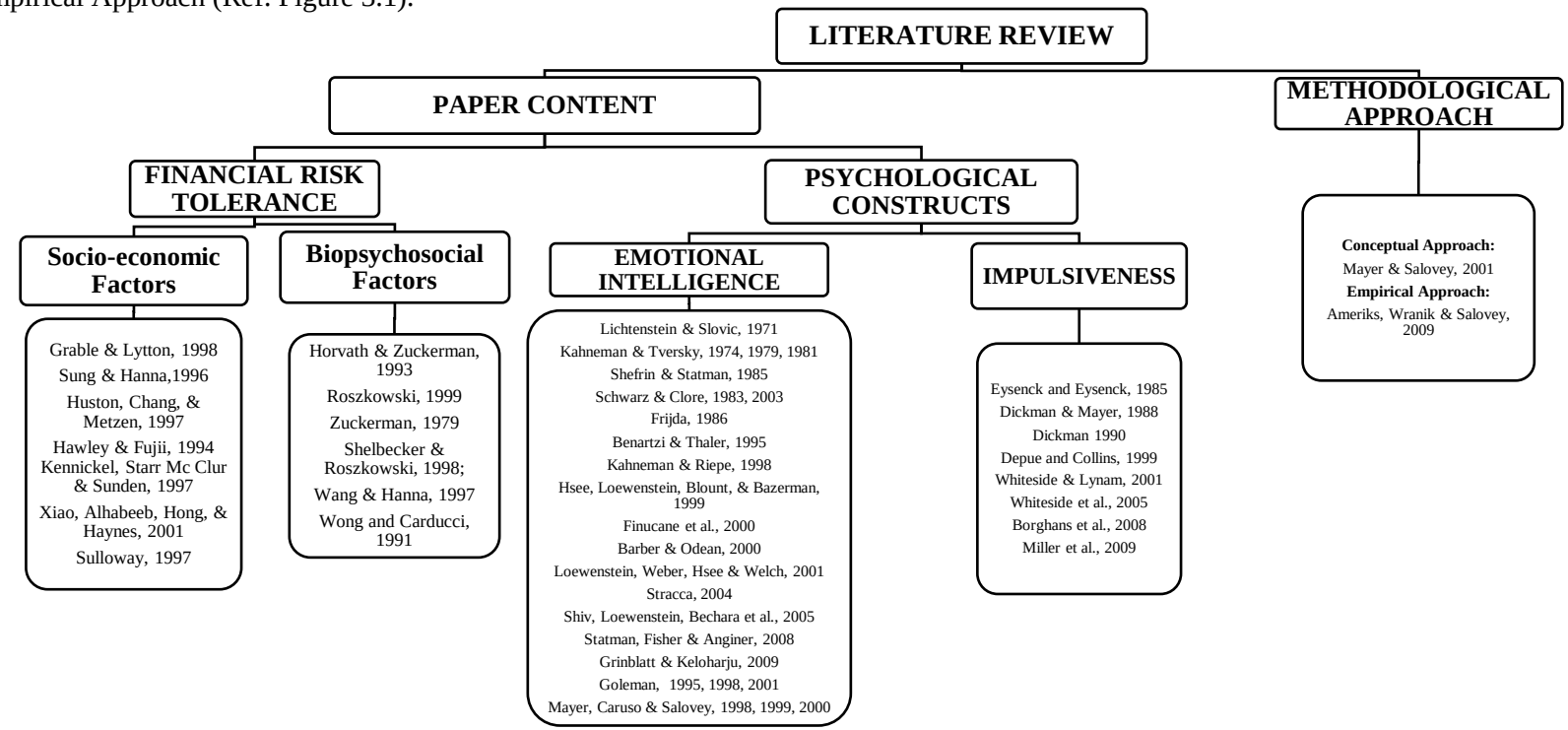

Figure 3.1: Snapshot of Literature Review

3.1. Paper Content

3.1.1 Financial Risk Tolerance

The assessment and prediction of financial risk tolerance within the domain of financial counselling and planning involves, primarily, the use of demographic and socioeconomic factors (e.g., gender, age, marital status, ethnicity, income). The use of these variable types, rather than more diverse measures, may be related to the lack of developed application models of the principal factors affecting financial risk tolerance and behaviours. Demographic and socioeconomic factors also tend to be more accessible to financial counselling and planning researchers due to the lack of specification and standardization of other predisposing factor measures in large databases.

It was reported in general, that certain demographic and socioeconomic environmental characteristics (e.g., income) can predict risk tolerance (Hawley & Fujii, 1994; Kennickel, Starr Mc Clur & Sunden, 1997). Sung & Hanna (1996) and Grable & Lytton (1998) concurred with the findings.

Furthermore, it was also concluded that gender, marital status, ethnicity, and education predicts risk tolerance (Sung & Hanna, 1996; Huston, Chang, & Metzen, 1997, Grable & Lytton, 1998). However, also contrary to popular opinion, it was observed that risk tolerance increases with the age (Wang & Hanna, 1997).

Other factors that appear to influence a person's financial risk tolerance include environmental factors such as financial knowledge, and family situation (Roszkowski, 1999) and social development such as birth order (Sulloway, 1997), which is an example of a biopsychosocial factor.

Xiao, Alhabeeb, Hong, & Haynes (2001) found that factors including age, race, and net worth affect risk-taking attitudes and behaviours. Previous findings also suggested that financial risk-tolerance attitudes play a key role in the establishment of financial objectives and ultimately in the development of financial plans and strategies.

The study of risk taking having not been directly associated with personal financial concepts has now become so large that it has become focus for nearly all researchers. Various psychologists, economists, sociologists, and others have a long history of testing factors related to risk tolerance (Bell & Bell, 1993; Tigges, Riegert, Jonitz, Brengelmann, & Engel, 2000).

Wong and Carducci (1991) found a positive relationship between certain biopsychosocial factors (i.e., sensation seeking and aggressiveness) and risk tolerance. Other researchers like Horvath & Zuckerman, 1993; Shelbecker & Roszkowski, 1998; Zuckerman, 1979 have described the role of other psychosocial characteristics (e.g., self-esteem and personality) as possible factors that have an impact on a person's risk-tolerance attitudes.

Another biopsychosocial factor often associated with financial risk tolerance is the birth order. Roszkowski (1999) noted that birth order appears to be related to risk taking. The firstborn and an only child tend to be less willing to take risks than later born children in the family. A popular-press investigation of birth order on risk taking undertaken by Koselka and Shook (1997) confirmed that typical firstborn children tend to be dominant and less emotionally flexible compared to younger children who are seen as risk-taking mavericks.

As briefed, the study of risk tolerance is multidisciplinary. In consistence with the same, the proposed research will the investigate the combine effects of psychological and demographic factors in relation to risk tolerance.

3.1.2 Psychological Constructs

3.1.2.1 Emotional Intelligence

Emotional intelligence is a psychological characteristic and pertains to how an individual reason about and with emotions; it includes four component abilities or branches (Mayer & Salovey, 1997):

- **perceiving emotions:** *ability to accurately identify emotional content*
- **using emotions:** *concerns the utilization of emotion as information to assist thinking and decision making.*

- **understanding emotions:** *involves adequately labelling emotions and understanding their progression, and,*
- **managing emotions:** *pertains to effective managing of feelings in oneself and others to enhance well-being in self and others.*

The concept of Emotional Intelligence dates back to the work of Howard Gardner in 1983 who mentioned constellation of Intelligences including logical, linguistic, bodily, musical, interpersonal, etc. in his book.

Emotional Intelligence was found to be simply different from 'being emotional' since an emotional person may feel or act more intensely than others while an emotionally intelligent person is able to recognize and use emotions productively.

Researchers in the past decades have suggested emotions lead investors to make mistakes while perceiving risk and are unavoidable component of human decision-making. (Schwarz & Clore, 1983; Finucane et al., 2000; Loewenstein, Weber, Hsee & Welch, 2001) since investors rely on heuristics and cognitive shortcuts as opposed to expected utility theory and fall prey to their affective reactions. (Finucane, Alhakami, Slovic, & Johnson, 2000; Kahneman & Tversky, 1974) and tend to play safe as they are loss averse and anticipate regret for negative outcome. (Kahneman & Tversky, 1979; Shefrin & Statman, 1985; Benartzi & Thaler, 1995; Stracca, 2004; Shiv, Loewenstein, Bechara et al., 2005; Statman, Fisher & Anginer, 2008).

The quality of decisions based on heuristics or emotions tend to get influenced from the situational factors. (Lichtenstein & Slovic, 1971; Tversky & Kahneman, 1981; Hsee, Loewenstein, Blount, & Bazerman, 1999). Inspired by the ideas, Peter Salovey along with his colleagues worked upon the implications of Emotional Intelligence in multiple domains followed by devising measures to test for the same. Their research brought a shift on using moods and emotions in an advantageous manner since they form the central tenants of the emotional intelligence. (Goleman, 1998; Mayer, Salovey & Caruso, 1998).

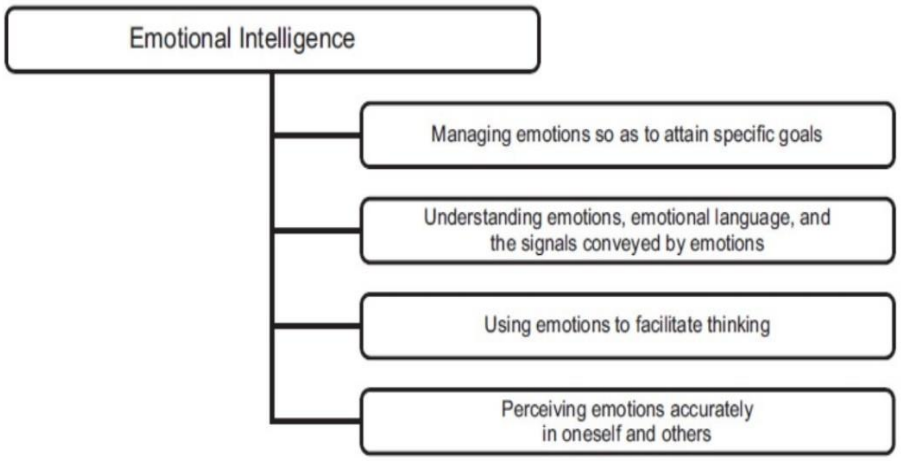
Emotional Intelligence
Managing emotions so as to attain specific goals
Understanding emotions, emotional language, and the signals conveyed by emotions
Using emotions to facilitate thinking
Perceiving emotions accurately in oneself and others

Figure 3.1.2.1: Four Branch Model of Emotional Intelligence (Source: Mayer & Salovey, 1997)

Emotional Intelligence allows one able to use and integrate his moods and emotions effectively to reap the potential benefits of the cues (Mayer & Salovey, 1999). In 2001, Peter Salovey in a chapter entitled "Applied Emotional Intelligence: Regulating Emotions to Become Healthy, Wealthy, and Wise", suggested that Emotional Intelligence should also play an important role in financial decision making. The suggestion was supported by Charles Ellis- a financial expert and author of several books stated that emotions are widespread in the domain of financial decision making, and individuals who are emotionally intelligent should be better investors.

Given the pervasiveness of moods and emotions in all spheres of life (including financial decision making), the concept of Emotional Intelligence is gaining in acceptance and the definitions, research, and measures of Emotional Intelligence are becoming more erudite over time. (Mayer, Roberts & Barsade, 2008).

Table 5: Commonly used measures of Emotional Intelligence

MEASURE	CORRESPONDING THEORIST	MODE OF MEASURE	BRIEF DESCRIPTION
Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT)	Mayer and Salovey	Performance-Based	Specific tasks are used to measure level of ability of each branch of emotional intelligence.

Emotional Quotient Inventory (EQ-i)	Bar-On	Self-Report	133 self-report items measure total IQ and each of the 5 components of the Bar-On model
Emotional Competency Inventory (ECI)	Goleman	Self-Report and Other-Report	A multi-rater instrument that provides ratings on a series of behavioural indicators of emotional intelligence
Emotional Intelligence Appraisal (EIA)	Goleman	Self-Report and Other-Report	A 7-minute assessment meant to measure the existence of Goleman's four components of emotional intelligence
Work Profile Questionnaire-Emotional Intelligence Version (WPQei)	Goleman	Self-Report	Measures 7 of Goleman's competencies thought of as most essential for effective work performance
Levels of Emotional Awareness Scale (LEAS)	Other	Self-Report	Measures levels of awareness of emotions in oneself and others
Self-Report Emotional Intelligence Test (SREIT)	Salovey and Mayer	Self-Report	A 33-item measure of Salovey and Mayer's original concept of emotional intelligence

3.1.2.2 Impulsiveness

The term impulsivity had different meanings to different researchers. To some it was the predisposition to act with a low or inadequate degree of deliberation, forethought, or control. (Moeller et al., 2001) while others considered it in operational terms and defined it to be a multidimensional construct, with impulsive behaviour potentially arising from several different mechanisms, underpinned by distinct neural, and cognitive systems (Evenden, 1999; Gray, 2000; Whiteside & Lyman, 2001; Dalley et al., 2011).

Impulsiveness have always often been associated with dysfunctional state, until it led to an argument concluding that an impulsive style of responding does not always yield negative results. Also, people who have been classified to be highly impulsive, sometimes perform better than the one with low trait impulsivity provided the task demands were simpler and the participants were under time constraints (Dickman & Meyer, 1988). Such observations led to the proposition that

there could be two general classes of impulsivity; (1) dysfunctional: defined as lack of forethought, and (2) functional: the tendency to act rapidly with little forethought (Dickman, 1990).

Impulsiveness was also found to be a significant predictor of pathological gambling behaviour (Alessi & Petry, 2003), to higher risks of smoking, drinking, and drug abuse and to aggression, severe personality disorders, and attention deficit problems (Deakin et al., 2004; Dohen et al., 2005).

Impulsiveness when studied under financial arena, led to useful differentiation between stimulating and instrumental risk taking. In latter case, risk is rational and included in the costs of attaining a goal. Stimulating risk taking, meanwhile, was characterised by arousal seeking, dysfunctional impulsivity and dis-inhibition most commonly known as pleasure. (Tomasz Zaleskiewicz, 2001).

Since an individual takes into account possible losses also; however, his or her main objective is to achieve positive results in the area of his or her interest in predicting real financial outcomes. Therefore, the proposed study will be focussing on **instrumental risk-taking** which is the likely preference of financial services organisations.

Table 6: Synthesized Matrix of Literature Review

Author	Financial Risk Tolerance	Emotional Intelligence	Impulsiveness	Demographics	Findings
Alessi & Petry, 2003	√		√		Impulsivity was a significant predictor of pathological gambling behaviour.
Bajtelsmit & Bernasek, 1996; Byrnes, Miller & Schafer, 1999	√			√	Gender was found to play a significant role in risk-aversion.

Author	Financial Risk Tolerance	Emotional Intelligence	Impulsiveness	Demographics	Findings
Bajtelsmit, Bernasek & Jianakoplos, 1999; Hariharan, Chapman & Domian, 2000; Barber & Odean, 2001; Felton, Gibson & Sanbonmatsu, 2003; Hallahan, Faff & McKenzie, 2004; Olsen & Cox, 2001, Worthington, 2006	√			√	Women invest differently than men in higher risky assets having possessed similar significant personal characteristics.
Barber & Odean, 2000					Studied the experience of actual investors by examining the impact of intuitive thinking on preference of investment.
Barnewall, 1988					Psychographics was found to be the basis for identifying individual's need for financial services from perspective of customer so as to carve a niche for marketing.
Becker, 2003		√			Emotional intelligence was criticized for its measures lacking in validity and reliability and the fact having based on problematic conceptualization that emotional intelligence is not different from general intelligence aiming at phenomena of emotions.
Depue & Collins, 1999	√		√		Sensation-seeking, risk-taking, novelty seeking, boldness, adventuresomeness, boredom susceptibility, unreliability, and unorderliness as defined to be the lower-order traits of impulsivity were linked to extraversion.
Dickman & Meyer, 1988			√		When task demands are simpler and participant is under time constraint, people with high trait impulsivity perform better than the one with low trait.
Dickman, 1990			√		Lack of forethought and tendency to act rapidly with a little forethought were proposed to be the two classes of impulsivity. The former was said to be dysfunctional state and later was called functional state.
Evenden,1999; Gray, 2000; Dalley et al., 2011			√		Impulsive behaviour possibly arising from several different mechanism was considered to be a multidimensional

Author	Financial Risk Tolerance	Emotional Intelligence	Impulsiveness	Demographics	Findings
					paradigm reinforced by several neural and cognitive systems.
Eysenck & Eysenck, 1985	√		√		Components of impulsiveness like psychoticism, venturesome and sensation-seeking were included as component of extraversions in three-dimensional view of personality.
Finucane et al., 2000		√			Emotional feedbacks since appears in an automatic and unconscious way, were found to have negative influence on decision-making since their efforts remain unrecognized when people make conscious or informed evaluations.
Goleman, 1995		√			Emotional Intelligence was found to be as and more powerful than I.Q.
Goleman, 1998; Mayer, Caruso & Salovey, 1998		√			Emotional Intelligence does provide the basis for emotional competencies
Grable & Lytton, 1998	√			√	Opined that education and gender predict risk-tolerance attitudes
Gupta, 1991					A portfolio designing is more than merely picking up securities for investments and while developing a portfolio for a client, the portfolio manager must be clear about the psyche of his client.
Harlow & Brown, 1990					Psychologists view individual's choice is primarily determined by factors that are unique to particular decision-making while economists view that some individual mechanism play a common role in all economic decisions.
Hawley & Fujii, 1994; Kennickel, Starr Mc Clur & Sunden, 1997	√			√	Reported in general, that certain demographic and socioeconomic environmental characteristics (e.g., income) can predict risk tolerance
Hedlund & Sternberg, 2000		√			Put forward the hypothesis that emotional intelligence does not lacks as a concept but in terms of how the constructs have been conceptualized and operationalized.

Author	Financial Risk Tolerance	Emotional Intelligence	Impulsiveness	Demographics	Findings
Julie R. Agnew, 2003	√	√		√	Women being more risk averse as compared to men tends to invests in assets which are less risky.
Kahneman & Riepe, 1998; Grinblatt & Keloharju, 2009	√	√			Investors were found to be risk-seekers, overconfident who places higher weight on short-term investments rather than long-term investments.
Kahneman & Tversky, 1979; Shefrin & Statman, 1985; Benartzi & Thaler, 1995; Stracca, 2004; Shiv, Loewenstein, Bechara et al., 2005; Statman, Fisher & Anginer, 2008;	√	√			Emotions bring negative impact on the performance of investors due to his loss aversion nature and anticipation of regret he experiences if taking risks results in loss.
Klonsky and May, 2010	√		√		The risk of engaging in impulsive acts differentially relates to four factor of UPPS Impulsive Behaviour Scale.
Lam & Kirby, 2002		√			Individual's cognitive-based performance over and above the level accredited to general intelligence is contributed by Emotional intelligence.
Langer, 1975	√	√			Self-reported risk tolerance behaviour differentiates portfolio diversification and portfolio turnover across individual investors.
Lichtenstein & Slovic, 1971; Tversky & Kahneman, 1981; Hsee, Loewenstein, Blount, & Bazerman, 1999;		√			The quality of decisions having relied on heuristics or emotions are influenced by situational factors.
Loewenstein, Weber, Hsee & Welch, 2001	√	√			People make mistakes while perceiving risk as a result of emotional reactions.
Mathews et. al., 2004		√			Found positive association with emotions.
Mayer, Caruso & Salovey, 1999		√			Found correlation in emotional intelligence with parental warmth and attachment style.
Moeller et al., 2001			√		Impulsivity was defined as the tendency to act with little or inadequate degree of deliberation, forethought and control.
Palmer, Donaldson & Stough, 2002		√			Emotional intelligence was found to be a significant predictor of life satisfaction.

Author	Financial Risk Tolerance	Emotional Intelligence	Impulsiveness	Demographics	Findings
Pellitteri, 2002	√	√			People who score high on emotional intelligence trait were more likely to adopt a defensive mechanism and exhibit healthy psychological adaptation.
Statman, 1988	√	√			People trade because they possess all the information (cognitive reason) and trading leaves them with a feeling of pride and joy thereby attempting to avoid the realization of losses which could bring pain of regret.
Sulloway, 1997; Roszkowski, 1999	√				Other factors that appear to influence a person's financial risk tolerance include environmental factors such as financial knowledge, and family situation and social development such as birth order
Sung & Hanna,1996; Huston, Chang, & Metzen, 1997	√			√	Concluded that gender, marital status, ethnicity, and education predicts risk tolerance
Tversky & Kahneman, 1974					People behave as opposed to Expected Utility Theory being more prone shortcuts like cognitive use of heuristics and affective reactions.
Wang & Hanna, 1997	√			√	Found contrary opinion that risk tolerance increases with age
Warren et al., 1990		√		√	Individuals choice of investment among the various options depends upon the lifestyle they follow and the attributes of their demographics.
Wong and CarduccI, 1991	√		√		Found a positive relationship between certain biopsychosocial factors (i.e., sensation seeking and aggressiveness) and risk tolerance
Xiao, Alhabeeb, Hong, & Haynes, 2001	√			√	Found that factors including age, race, and net worth affect risk-taking attitudes and behaviours.
Zuckerman, 1979; Horvath & Zuckerman, 1993; Shelbecker & Roszkowski, 1998;	√				The role of psychosocial characteristics like self-esteem and personality were described as possible factors that have an impact on a person's risk-tolerance attitudes.

4. Need of Study

People often view financial investing as overwhelming, intimidating, and scary, especially if they have to tackle the task on their own. They are fearful of making costly mistakes that could influence both their present and future financial well-being.

Considering the importance of financial risk tolerance in investment decisions, previous studies have investigated a number of factors namely, demographic, social, environmental, and psychological factors across countries over a period of time (Grable, 1997; Grable & Lytton, 1999a, 1999b; Coleman, 2003; Grable & Joo, 2004; Hallahan et al., 2004; and others).

Financial Risk Tolerance is a multidimensional attitude. It is an elusive concept that appears to be influenced by a number of predisposing factors such as environmental and psychosocial factors (Trone et al., 1996).

Financial risk tolerance of an individual is one of the inputs required to develop a financial and investment plan, the other inputs being objectives or goals, time horizon, and financial stability or constraints (Garman & Forgue, 2011).

Whether an individual makes a decision for himself or on behalf of others as a financial advisor, measuring financial risk tolerance is the key to the success of investment decisions. Thus, understanding the consequences of investment mismanagement would help investors in making wise decisions according to market conditions.

All financial advisors or investors understand their responsibility in considering financial risk tolerance and the consequences of previous investment mismanagement while matching investment options and strategies (Garman & Forgue, 2011).

Owing to the sub-prime mortgage crisis in 2008 and Greece crisis in 2010, the value of assets (equity, for example) decreased, and inflation increased, weakening the currency value (of India more than other countries), and increasing unemployment or salary cuts. This increased the financial vulnerability of investors (Bricker et al., 2011; Yao et al., 2011). Such a scenario changes

the level of financial risk tolerance and emphasises the importance of a periodic assessment of financial risk tolerance (Yao et al., 2011).

Moreover, periodic review of the risk tolerance would help in choosing/changing the investors' investment options in accordance with market conditions and thereby improvising their risk-taking behaviour.

Implications of psychology in financial context will attempt to improve financial knowledge and solve many financial limitations. Though various conceptual literature can be fetched but no empirical study has so far been conducted in Indian Context. Therefore, the proposed study shall attempt to obtain the empirical evidence on the impact of psychological constructs on financial risk tolerance among individual investors Also, the study intends to examine the role of demographics as a moderating and differentiating factor of individual investors' financial risk-tolerance.

5. Objectives of the study

1. To organize and analyze the theoretical framework of psychological constructs influencing individual's financial risk tolerance.
2. To assess the impact of psychological constructs on financial risk tolerance of individual investors.
3. To identify the moderating effect of demographics on relationship between psychological constructs and financial risk tolerance of individual investors.
4. To suggest the remedial measures to individual investors and professionals to overcome the mistakes and improve performance.

6. Conceptual Framework & Methodology

6.1 Conceptual Model

The objectives and hypotheses of the study are based on the conceptual framework as shown in Figure 6.1. The framework represents relationship between various psychological constructs, demographics and financial risk tolerance and risk-taking of individual investors.

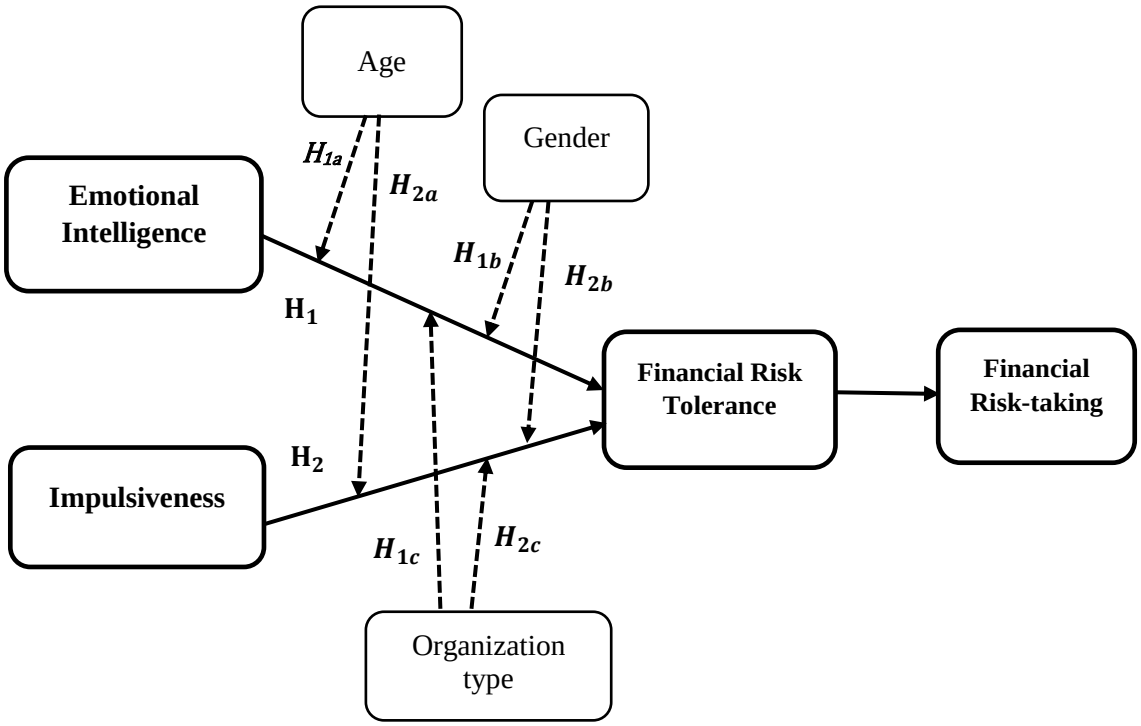

Figure 6.1: Framework of Psychological constructs and its relation to Financial Risk Tolerance

In the proposed research, the researcher will carry out the research on the basis of the suggested framework as presented in Figure above.

The researcher has introduced the psychological constructs namely; Emotional Intelligence and Impulsiveness. Demographic variables (age, gender, organization type) will be used as moderator. The model will examine the impact of psychological constructs and demographics on investor's financial risk tolerance in Indian capital market.

6.2 Methodology

This research will be a descriptive research study based on survey technique. In order to make the study more reliable, data will be collected from both primary and secondary sources.

The primary data will be collected from the selected study sample, using the appropriate sampling techniques followed by analysis of the results via relevant statistical tools to draw logical inferences and valid conclusions.

6.2.1 Hypotheses Development

The hypotheses for the study drawn are based on the facts as revealed in previous researches:

6.2.1.1 Emotional Intelligence and Financial Risk Tolerance

John Ameriks, Tanja Wranik & Peter Salovey, 2009 predicted that investors who score high on test of Emotional Intelligence tend to exhibit risk averse behaviour. Thus, it is predicted;

H_1: There is a relationship between Emotional Intelligence and individual investor's financial risk tolerance.

6.2.1.1.1 Moderating effect of Demographics on relationship between Emotional Intelligence and Financial Risk Tolerance

6.2.1.1.1.1 Age

Mayer, Caruso, and Salovey (1999) asserted that in order for emotional intelligence to be considered a standard intelligence, it should increase with age and experience. Van Rooy, Alonso, and Viswesvaran (2005) examined the relationship between emotional intelligence and age and found a significant positive correlation between emotional intelligence and age.

In context to risk tolerance attitude, older individuals tend to be less risk tolerant than younger individuals, probably because older individuals have less time to meet their goals and objectives (Grable & Lytton, 1999a, 1999b). Therefore, it is hypothesized that;

H_{1a}: *There is a significant moderating effect of age on the relationship between Emotional Intelligence and Financial Risk Tolerance.*

6.2.1.1.1.2 Gender

The prevalent results of Emotional Intelligence tests reported women to be more socially skilful as compared to men (Hargie, Saunders, & Dickson, 1995). Moreover, the prevailing belief of cultures across countries is that men should, and do take greater risks than women (Slovic, 1966) and this has been borne out by financial advisors (Bajtelsmit & Bernasek, 1997). As a result, the following hypothesis is proposed;

H_{1b}: *There is a significant moderating effect of gender on the relationship between Emotional Intelligence and Financial Risk Tolerance.*

6.2.1.1.1.3 Organization type

Among salaried individuals, those who work in the private sector are perceived to be high risk takers compared to the individuals working in the public sector (Grable & Lytton, 1999a, 1999b; Sung & Hanna, 1996). Thus, it is hypothesized that;

$\boldsymbol{H_{1c}}$**:** *There is a significant moderating effect of organization type on the relationship between Emotional Intelligence and Financial Risk Tolerance.*

6.2.1.2 Impulsiveness and Financial Risk Tolerance

John Ameriks, Tanja Wranik & Peter Salovey, 2009 found a strong association between urgency and transaction activity of investors and that being not impulsive can create problems for investors. Therefore, the following hypothesis is as stated;

$\mathbf{H_2}$**:** There is a relationship between impulsiveness and individual investor's financial risk tolerance.

6.2.1.2.1 Moderating effect of Demographics on relationship between Impulsiveness and Financial Risk Tolerance

6.2.1.2.1.1 Age

It was found that age may be negatively correlated with the ability to make optimal decisions under risk and uncertainty (Dror, Katoan & Mungur, 1998). It was suspected that people with high impulsivity would not thrive in the difficult, risky and cognitively complex situations, or if they did, they would likely be eliminated in the early stages of professional selection or would resign. Therefore, the following hypothesis is predicted;

$\boldsymbol{H_{2a}}$**:** *There is a significant moderating effect of age on the relationship between Impulsiveness and Financial Risk Tolerance.*

6.2.1.2.1.2 Gender

Research evidence reveals that boys and girls differ significantly on impulsivity; however, results on why this occurs are ambiguous (Constance L. Chapple & Katherine A. Johnson, 2007). However, other studies stated the female individuals tend to discount more steeply than male individuals on impulsive choice, whereas in case of impulsive action, gender differences depend

on the task administered (Hosseini-Kamkar N., Morton J., 2014). Therefore, it is hypothesized that;

H_{2b}: *There is a significant moderating effect of gender on the relationship between Impulsiveness and Financial Risk Tolerance.*

6.2.1.2.1.3 Organization type

Among salaried individuals, those who work in the private sector are perceived to be high risk takers compared to the individuals working in the public sector (Grable & Lytton, 1999a, 1999b; Sung & Hanna, 1996). Therefore, it is hypothesized that:

H_{2c}: *There is a significant moderating effect of organization type on the relationship between Impulsiveness and Financial Risk Tolerance.*

6.2.2 Scope of Study

The study will target individual investors having association with leading Stock Broking Companies located in Agra district of Uttar Pradesh, India.

6.2.3 Sampling

6.2.3.1 Sample Frame

Sample composition will consist of all those individuals who are 21+ years of age and have association with leading stock broking agencies.

6.2.3.2 Sampling Technique

Purposive Sampling Method will be used to draw representative samples from the population for the study.

6.2.3.3 Calculation of Sample Size

Taking a statistical approach for calculation of sample size, the various quantitative measures to be considered while determining the sample size are as follows:

- Variability of population characteristics or standard deviation (σ)
- Level of confidence desired or Z value (taken as 1.96 for 95% confidence level desired)
- Degree of precision desired in estimating population characteristics (D)

The study has used the following formula for testing hypothesis around mean (Malhotra, 2011).

$$n_0 = \frac{\sigma^2 \,.\, Z^2}{D^2}$$

where, n_0 = sample size

σ = Standard Deviation

Z = Standard normal variate for 95% confidence level and,

D = Degree of precision desired

In order to obtain a representative and realistic sample size, the results of sample size from 3 scenarios are compared;

Scenario 1: Estimating a high standard deviation and low degree of precision.

Scenario 2: Estimating a moderate standard deviation and moderate degree of precision.

Scenario 3: Estimating a low standard deviation and high degree of precision.

The results are summarised in Table 7 below;

Table 7: Comparative Analysis Taking Different Values of σ and D.

	σ	Z	D	n_0
Scenario 1	0.6	1.96	0.05	553
Scenario 2	0.5	1.96	0.06	267
Scenario 3	0.4	1.96	0.07	125
Total				**945**
Average				**315**

Taking an average of the all the three scenarios, considered taking different values of σ and D, the sample size computed for the study is **315** at 95% confidence level.

6.3 Sources of Data Collection

6.3.1 Primary Data

Data will be collected from investors diverse population database obtained from leading Stock Broking Agencies spread over Agra district of Uttar Pradesh through convenient contacts.

6.3.2 Secondary Data

Data will be collected from different sources like journals or publication of finance/economic/psychology/organization behaviour, newspapers, internet and libraries. The data pertaining to savings and investment behaviour will be collected from the Annual reports of

Securities and Exchange Board of India, Indian Economic Survey released by Ministry of Finance, Official websites of National Stock Exchange, Bombay Stock Exchange, National Council for Applied Economic Research and Reserve Bank of India.

6.4 Statistical Tools

To test the proposed relationships, data will be analysed using Partial Least Square - Structural Equation Modelling (PLS-SEM). The assessment of model will be done at two levels:

- The outer model will be tested using Indicator Reliability, Internal consistency, Convergent Validity and Discriminant Validity.
- The inner model will be assessed using Standardised Beta Coefficients, *p*-values and *t*-values.

7. Implications of the study

By focusing on psychological characteristics, the findings will contribute to explore reasons for the incongruity in decision to investment in a particular stock so that financial engineering agencies can devise an appropriate asset allocation strategy.

- The findings of the study will be of great significance in offering guidelines to address the current challenges in Behavioural Finance and will ultimately be helpful in encouraging the investment activities.
- The research will help in expanding the literature in the interdisciplinary (Psychological constructs) to improve investors performance for competitive advantage of nation as a whole.
- Understanding the individual investor behaviour may further lead to understand the market microstructure better and shift the focus from institution-centric approach to a balanced approach (where individual investors are also viewed as a significant player in capital market).
- It will also enable practicing Financial engineers to remain relevant amidst the contemporary challenges by putting in place programmes for spreading awareness on

psychological constructs and employing strategies for management of investors performance in their ability to get better results.

- For the government, understanding of psychological factors influencing the investors' risk tolerance will affect the required legislation and will help in establishing the additional procedure to make the market more investor-friendly and efficient.
- To the other researchers, it will pose a challenge to be proactive in the search for solutions to the contemporary challenges and also enrich the limited body of knowledge on interdisciplinary field.

8. Proposed Chapterization

The structure of the proposed study will be as follows:

Chapter 1 Introduction

Chapter 2 Review of Literature

Chapter 3 Research Methodology

Chapter 4 Analysis and Results

Chapter 5 Conclusions and Suggestions

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